

DESALINATION

THE INTERNATIONAL JOURNAL ON THE SCIENCE AND TECHNOLOGY OF DESALTING AND WATER PURIFICATION

Tables of Contents

August 1997 – February 1999

Volumes 113 – 121

Miriam Balaban, Editor

Elsevier Science, Publisher



Volume 113 (1997)

1 Non-equilibrium thermodynamics analysis of the transport properties of formed-in-place Zr(IV) hydroxide-polyacrylate membranes: III. Ternary lactose-NaCl-water solutions Daniela Szaniawska and H.G. Spencer

7 Treatment of sugar decolorizing resin regeneration waste using nanofiltration S. Cartier, M.A. Theoleyre and M. Decloux

19 Dual-purpose chemical desalination process H.K. Abdel-Aal, A.A. Ibrahim, M.A. Shalabi and D.K. Al-Harbi

27 Design of centralized controllers for a MSF desalination plant B.C. Reddy, M. Chidambaram and D.M.K. Al-Gobaisi

39 Prediction of RO membrane performance for Arabian Gulf seawater Essam El-Sayed, Sadeq Ebrahim, Mahnoud Abdel-Jawad and Ghada Al-Nuwaibit

51 A method of obtaining fresh water from humid atmosphere H.I. Abualhamayel and P. Gandhidasan

65 Compact accelerated precipitation softening (CAPS) as a pretreatment for membrane desalination. I. Softening by NaOH O. Kedem and G. Zalmon

73 Compact accelerated precipitation softening (CAPS) as pretreatment for membrane desalination. II. Lime softening with concomitant removal of silica and heavy metals Alexandra Masarwa, Dan Meyerstein, Naphtali Daltrophe and Ora Kedem

85 Transport of electrolytes through a weak acid nanofiltration membrane: Effects of flux and crossflow velocity interpreted using a fine-porous membrane model Xianting Xu and H. Garth Spencer

95 Water permeability in ultrafiltration and microfiltration: Viscous and electroviscous effects Ingmar H. Huisman, Benoît Dutré, Kenneth M. Persson and Gun Trägårdh

Volume 113 (1997)**Proceedings No. 37: (see p. 287)**

111 Drinking water supply in Italy D. Barba, P. Caputi and D. Cifoni

119 Role of membrane technology in drinking water treatment in the United States Joseph G. Jacangelo, Rhodes Trussell and Montgomery Watson

129 Theoretical optimization of spiral-wound and capillary nanofiltration modules W.G.J. van der Meer and J.C. van Dijk

147 Ultra-low pressure RO membranes: an analysis of performance and cost Gerry Filteau and Peter Moss

153 New development in nanofiltration and reverse osmosis membrane manufacturing Jean de Witte

157 Design consequences of recent improvements in membrane performance Mark Wilf

165 Latest developments in ultrafiltration for large-scale drinking water applications W. Doyen

179 Integrity of membrane elements, vessels and systems M.M. Nederlof, H.C. Folmer, J. Verdouw and B. Heijman

183 Assessment of a particle counting method for hollow fiber membrane integrity K. Glucina, Z. Do-Quang and J.M. Lainé

189 Immersed membrane activated sludge for the reuse of municipal wastewater Pierre Côté, Hervé Buisson, Charles Pound and Greg Arakaki

197 Treatment of low-contaminated waste water from the food industry to produce water of drinking quality for reuse V. Mavrov, A. Fähnrich and H. Chmiel

205 Removal of pesticides and other micropollutants by nanofiltration P. Berg, G. Hagmeyer and R. Gimbel

209 Removal of pesticides and other micropollutants with cellulose-acetate, polyamide and ultra-low pressure reverse osmosis membranes J.A.M.H. Hofman, E.F. Beerendonk, H.C. Folmer and J.C. Kruithof

215 Biofouling - the Achilles heel of membrane processes H.-C. Flemming, G. Schaule, T. Griebel, J. Schmitt and A. Tamachkiarowa

227 Scale inhibition techniques used in membrane systems E.G. Darton

231 Prediction of flux decline in membrane systems due to particulate fouling Siobhán F.E. Boerlage, Maria D. Kennedy, Paul A.C. Bonné, Gilbert Galjaard and Jan C. Schippers

235 Modelling non-Newtonian behaviour of gel layer at membrane surfaces in membrane filtration S. Agashichev

247 Optimization of operation and cleaning of membranes - Results on ultra- and microfiltration pilot plant investigations to treat reservoir water S. Panglisch, I. Kiepke, W. Dautzenberg and R. Gimbel

251 Recovery and reuse of chemicals in unhairing, degreasing and chromium tanning processes by membranes
A. Cassano, E. Drioli and R. Molinari

263 The integrated nanofiltration system of the Méry-sur-Oise surface water treatment plant (37 mgd)
Claire Ventresque and Guy Bablon

267 Full-scale application of membrane microfiltration in North West Water Huntington stage 4, provision of an 80 Mld plant
Peter Hillis

273 L'Apié and Vigneux case studies: first months of operation
I. Baudin, M.R. Chevalier, C. Anselme, S. Cornu and J.M. Lainé

277 Performance of a nanofiltration plant on hard and highly sulphated water during two years of operation
S. Bertrand, I. Lemaître and E. Wittmann

283 Full-scale treatment of filter backwash water in one step to drinking water
Ger Vos, Yvette Brekvoort and Paul Buys

285 Treatment of a soft reservoir water by limestone filtration in combination with ultrafiltration
Pia Lipp, Andreas Schmitt and Günther Baldauf

293 Environmental impact assessment of groundwater treatment with nanofiltration
H.D.M. Sombekke, D.K. Voorhoeve and P. Hiemstra

297 Reverse osmosis systems in military or emergency operations
Laurence Quinn

303 Automatic monitoring of membrane integrity in microfiltration systems
Warren T. Johnson

309 Membrane selection and design considerations for meeting European potable water requirements based on different feedwater conditions
J.A. Redondo and F. Lanari

37 Software to analyze solar stills and an experimental study on the effects of the cover
Abdulrahman Ghoneyem and Arif Ileri

45 Separation of gluconate with conventional and bipolar electrodialysis
Senad Novalic, Teeraporn Kongbangkerd and Klaus D. Kulbe

51 Characterization of foulants by autopsy of RO desalination membranes
F.H. Butt, F. Rahman and U. Baduruthamal

65 Cross-flow microfiltration of biologically treated wastewater
L. Vera, R. Villarroel-López, S. Delgado and S. Elmaleh

77 Physico-chemical studies on BELGARD EV and BELGARD EV 2000. Part III: Analytical procedures for the estimation of active components
A.M. Shams El-Din and R.A. Mohammed

85 Corrosion inhibition by molybdate / polymalate mixtures
A.M. Shams El-Din, R.A. Mohammed and H.H. Haggag

101 Streaming potential and ion transmission during ultra- and microfiltration on inorganic membranes
Laurence Ricq, André Pierre, Jean Claude Reggiani and Jacques Pagetti

111 Experimental investigation of evaporation performances of a desalination prototype using the aero-evapo-condensation process
K. Bourouni, R. Martin, L. Tadrist and H. Tadrist

129 Dye-salt separations by nanofiltration using weak acid polyelectrolyte membranes
Xianting Xu and H.G. Spencer

139 A new power and water cogeneration concept with application of reverse osmosis desalination
T. Altmann

145 PCS - Preussag Conversion System® Mobile floating seawater desalination plant
Harald Lampe, Thomas Altmann and Hans J. Gätjens

153 A new design of a double-condensing chamber solar still
G.N. Tiwari, A. Kupfermann and Shruti Aggarwal

165 Electrodeionization with ion exchange textile for the production of high resistivity water: Influence of the nature of the textile
Emmanuel Dejean, Evgueni Laktionov, Jacqueline Sandeaux, Roger Sandeaux, Gérald Pourcelly and Claude Gavach

175 Treatment of high-temperature rinsing water from a degreasing plant by reverse osmosis
A.-S. Jönsson and J. Wennerbeck

Volume 114 (1997)

1 Multi-criteria analysis of non-conventional energy technologies for water desalination in Jordan
Bilal A. Akash, Odeh R. Al-Jayyousi and Mousa S. Mohsen

13 A new control concept for an improved level control in MSF desalination plants
Andreas Bunzemeier

23 Application of modified synthetic carbon for adsorption of trihalomethanes (THMs) from water
A.W. Morawski and M. Inagaki

29 Corrosion of iron in aqueous solutions containing a chemical cleaning agent
A.M. Al-Mayouf

183 The effects of osmotic pressure and fouling during a concentration process of BSA solutions by ultrafiltration
Diego Barba, Franco Evangelista, Hao Wang and Daniela Spera

189 Dynamic response of multi-effect evaporators
Narmine H. Aly and M.A. Marwan

203 Synthesis and water ultrafiltration properties of silver membrane supported on porous ceramics
Antonio Pérez Padilla, Jorge A. Rodríguez and Hugo A. Saitúa

209 An economic analysis of desalination for potential application in Korea
Mi-Hyun Park, No-Suk Park, Heekyung Park, Hang-Sik Shin and Byung-Duck Kim

223 Casting and characterization of cellulose acetate butyrate based UF membranes
Ashutosh D. Sabde, M.K. Trivedi, V. Ramachandhran, M.S. Hanra and B.M. Misra

233 Thermo-economic modeling of dual-purpose power/desalination plants: steam cycles
I. Kamal

241 Study of a new technique for fluoride removal from water
H. Lounici, L. Addour, D. Belhocine, H. Grib, S. Nicolas, B. Bariou and N. Mameri

253 Analysis of single-effect evaporator desalination systems combined with vapor compression heat pumps
Faisal Al-Juwayhel, Hisham El-Dessouky and Hisham Ettonuey

277 The non-equilibrium factor and the flashing evaporation rate inside the flash chamber of a multi-stage flash desalination plant
Hassan E.S. Fath

289 Robust control of industrial multi-stage flash desalination plants
Emad Ali, Abdelhamid Ajbar and Khalid Alhumaihi

43 Heat transfer analysis of preheated turbulent falling films in vertical tube evaporators
N.M. Al-Najem, K.Y. Ezuddin and M.A. Darwish

57 Industrial wastewater management in Kuwait
Saleh Al-Muzaini

63 Modified and unmodified alumina membranes in ultrafiltration of board mill wastewater fractions
Niina Laitinen, Antero Luonsi, Erkki Levänen, Lars Grönroos, Tapio Mäntylä and Marianne Nyström

71 Coupling of a membrane distillation module to a multieffect distiller for pure water production
M.C. de Andrés, J. Doria, M. Khayet, L. Peña and J.I. Mengual

83 Solar energy exploitation for reverse osmosis desalination plants
N.G. Voros, C.T. Kiranoudis and Z.B. Maroulis

111 Preparation of high-purity sulphate lignin from spent black liquor using ultrafiltration and diafiltration processes
Ignacy Tanistra and Michal Bodzek

121 Experimental study of evaporation in distillation
G.N. Tiwari, Md. Emran Khan and R.K. Goyal

129 Electrokinetic characterisation of mixed alumina-titania-silica MF membranes by streaming potential measurements
A. Szymczyk, P. Fievet, J.C. Reggiani and J. Pagetti

135 Contribution to the problem of vapour-side corrosion of copper-nickel tubes in MSF distillers
A.M. Shams El-Din and R.A. Mohammed

145 Kinetics of the reaction between hydrogen peroxide and hypochlorite
A.M. Shams El-Din and R.A. Mohammed

155 Process synthesis: the multi-stage flash desalination system
Hisham El-Dessouky, Imad Alatiqi and Hisham Ettonuey

181 Convective mass transfer in a double-condensing chamber and a conventional solar still
Shruti Aggarwal and G.N. Tiwari

189 Metathesis of magnesium and sodium salt systems by electrodialysis
Cyrille Alhéritière, William R. Ernst and Thomas A. Davis

199 Sorption and recovery of heavy oil by using exfoliated grafite
Masahiro Toyoda, Junichi Aizawa and Michio Inagaki

203 A hybrid SWRO/BWRO desalination plant
P. Glueckstern and M. Priel

Volume 115 (1998)

1 Simulation and data validation in multistage flash desalination plants
Mahmoud Bourouis, Luc Pibouleau, Pascal Floquet, Serge Domenech and Darwish M.K. Al-Gobaisi

15 Bench-scale testing of surfactant-modified reverse osmosis/nanofiltration membranes
Michelle Chapman Wilbert, John Pellegrino and Andrew Zydny

33 Operation processes affecting corrosion in MSF distillers
A.M. Shams El-Din and Bushara Makkawi

39 Power input for the desalination plant in Santa Barbara, California
Edwin Newman

Volume 115 (1998)**Proceedings No. 38: (see p. 287)**

215 Humic membrane foulants in natural brown water: characterization and removal
A. Maartens, P. Swart and E.P. Jacobs

229 Long-term evaluation of a UF pilot plant for potable water production
J.P. Botes, E.P. Jacobs and S.M. Bradshaw

239 Adsorption of heavy metal ions by aminocarboxyl ion exchanger ANKB-35
V.D. Grebenyuk, S.V. Verbich, N.A. Linkov and V.M. Linkov

255 Electromembrane extraction of Zn from Na-containing solutions using hybrid electrodialysis-ion exchange method
V.D. Grebenyuk, R.D. Chebotareva, N.A. Linkov and V.M. Linkov

265 Phenomenological analysis of ethylene transport in a membrane contactor containing solutions of silver nitrate
Dmitri G. Bessarabov

279 Novel application of membrane contactors: solubility measurements of 1-hexene in solvents containing silver ions for liquid olefin/paraffin separations
Dmitri G. Bessarabov, J.P. Theron and R.D. Sanderson

285 Review of electro-assisted methods for water purification
J. Grimm, D. Bessarabov and R. Sanderson

295 Sol-gel film-preparation of novel electrodes for the electrocatalytic oxidation of organic pollutants in water
J. Grimm, D. Bessarabov, W. Maier, S. Storck and R.D. Sanderson

303 Suitability of a modified capillary membrane for growth of fungal biofilms
D.R. Ryan, A.K. Russell, W.D. Leukes, P.D. Rose and S.G. Burton

307 Immunobilisation of polyphenol oxidase on nylon and polyethersulphone membranes: effect on product formation
A. Boshoff, W. Edwards, W.D. Leukes, P.D. Rose and S.G. Burton

313 Surface modification of anion-exchange electrodialysis membranes to enhance anti-fouling characteristics
V.D. Grebenyuk, R.D. Chebotareva, S. Peters and V. Linkov

Volume 116 (1998)

1 Optimization of collector and basin areas for higher yield for active solar still
Sanjeev Kumar and G.N. Tiwari

11 Exergy losses in a multiple-effect stack seawater desalination plant
Ali M. El-Nashar and Atef A. Al-Baghdadi

25 Corrosion inhibition of 304SS in sulfuric acid solutions by 2-methyl benzoazole derivatives
A.M. Al-Mayouf, A.A. Al-Suhaybani and A.K. Al-Ameery

35 Reverse osmosis membranes prepared from potassium peroxydisulphate-modified poly(vinyl alcohol)
D. Bezuidenhout, M.J. Hurndall, R.D. Sanderson and A.J. van Reenen

45 Solar distillation: a promising alternative for water provision with free energy, simple technology and a clean environment
Hassan E.S. Fath

57 Coupling of PV-powered RO brackish water desalination plant with solar stills
Sayed M. Hasnain and Saleh A. Alajlan

65 Water reclamation from municipal wastewater using combined microfiltration-reverse osmosis (MF-RO): preliminary performance data and microbiological aspects of system operation
S.B. Sadr Ghayeni, P.J. Beatson, R.P. Schneider and A.G. Fane

81 Determination of the filtering layer electrokinetic properties of a multi-layer ceramic membrane
A. Szymczyk, P. Fievet, J.C. Reggiani and J. Pagetti

89 Optimization of operating parameters of MSF plants through automatic setpoint control
Ali M. El-Nashar

115 Use of ultrasonic TDR for real-time non-invasive measurement of compressive strain during membrane compaction
R.A. Peterson, A.R. Greenberg, L.J. Bond and W.B. Krantz

123 Desalination in Tunisia: past experience and future prospects
Fethi Ben Jemaa, Imed Houcine and Mohamed Hachemi Chahbani

135 Early failure of cupro-nickel condenser tubes in thermal desalination plants
Nausha Asrar, Anees U. Malik, Shahreer Ahmad, Abdul Hadi H. Al-Sheikh, Farhan Al-Ghamdi and Mohammad A. Al-Thobieti

145 Control of multi-stage flash desalination plants: a survey
Abdulla Ismail

157 Fuzzy model reference learning control of multi-stage flash desalination plants
Abdulla Ismail

165 Modelling of heat and mass transfer in a horizontal-tube falling-film evaporator for water desalination
K. Bourouni, R. Martin, L. Tadrist and H. Tadrist

185 Performance study of the capillary film solar distiller
Bachir Bouchekima, Bernard Gros, Ramdane Ouahes and Mostefa Diboun

Volume 117 (1998)
Proceedings No. 39: (see p. 287)

1 Alternative methods for membrane filtration of arsenic from drinking water
Philip Brandhuber and Gary Amy

11 Effect of pH on rejection of different species of arsenic by nanofiltration
Taro Urase, Jeong-ik Oh and Kazuo Yamamoto

19 65,000 GPD fluoride removal membrane system in Lakeland, California, USA
David Cohen and Herbert M. Conrad

37 Integrated multi-objective membrane systems for surface water treatment : pretreatment of reverse osmosis by conventional treatment and ultrafiltration
Joop C. Kruithof, J.C. Schippers, Peer C. Kamp, H.C. Folmer and J.A.M.H. Hofman

49 Treating different types of raw water with micro- and ultrafiltration for further desalination using reverse osmosis
Emmanuel van Houtte, Johan Verbauwheide, Frans Vanlerberghe, Sven Demunter and Johan Cabooter

61 Micro- and ultrafiltration of karstic spring water
Roberto Pianta, Markus Boller, Marie-Laure Janex, Aurelie Chappaz, Bernard Birou, Rafael Ponce and Jean-Louis Walther

73 Water repurification via reverse osmosis membranes
Paul Gagliardo, Samer Adham, Rhodes Trussel and Adam Olivieri

79 Quick-scan: selection of micro- and ultrafiltration membranes
Gilbert Galjaard, Jan C. Schippers, Maarten M. Nederlof and Hieke A. Oosterom

85 Methodology for accelerated pre-selection of UF type of membranes for large scale applications
Wim Doyen, B. Baée, F. Lambrechts and R. Leysen

95 Approval testing of membrane water treatment systems
John van Genderen and Bernard F. Hegarty

107 Supplying high quality drinking water to remote communities in Scotland
A.B.F. Grose, A.J. Smith, A. Donn, J. O'Donnell and D. Welch

119 Removal of soluble organics and manganese by a hybrid MF hollow fibre membrane system
T. Suzuki, Y. Watanabe, G. Ozawa and S. Ikeda

131 Flux and recovery influences on treatment efficiency in ultrafiltration of coloured drinking water
Thor Thorsen

139 Nanofiltration as a treatment method for the removal of pesticides from ground waters
Bart van der Bruggen, J. Schaepp, W. Maes, D. Wilms and C. Vandecasteele

149 Performance of 3 years operation of nanofiltration plants
Abdelkader Gaid, Guy Bablon, Greg Turner, Jacques Franchet and Jean Christophe Protais

159 Electrodialysis as an alternative for reverse osmosis in an integrated membrane system
Jan Peter van der Hoek, D.O. Rijnbende, C.J.A. Lokin, P.A.C. Bonné, M.T. Loonen and J.A.M.H. Hofman

173 Experience with full-scale electrodialysis for nitrate and hardness removal
Florian Hell, J. Lahnsteiner, H. Frischherz and G. Baumgartner

181 Immersed membrane filtration for the production of drinking water: case studies
Pierre Côté, Diana Mourato, Christian Günerich, John Russell and Ed Houghton

189 Comparative study of different MF and UF membranes for drinking water production
V. Mavrov, H. Chmiel, J. Kluth, J. Meier, F. Heinrich, P. Ames, K. Backes and P. Usner

197 Groundwater reclamation by innovative desalting in Orange County, California
William R. Everest, Ian C. Watson and Dennis MacLain

203 Membranes enabling the affordable and cost effective reuse of wastewater as an alternative water source
Colin Reith and Brian Birkenhead

211 Ozone-microfiltration system
Yoshihiko Mori, T. Oota, M. Hashino, M. Takamura and Y. Fujii

219 Immersed membrane filtration for the production of drinking water: combination with PAC for NOM and SOCs removal
Thomas Lebeau, Claire Lelièvre, Hervé Buisson, Daniel Cléret, Larry W. Van de Venter and Pierre Côté

233 A new process to remove halogenated VOCs for drinking water production: vacuum membrane distillation
N. Couffin, C. Cabassud and V. Lahoussine-Turcaud

247 Modelling the salt rejection of nanofiltration membranes for ternary ion mixtures and for single salts at different pH values
Georg Haghmeyer and R. Gimbel

257 A theoretical basis for specifying nanofiltration membranes – dye/salt/water streams
W. Richard Bowen and A. Wahab Mohammad

265 Adsorption of trace organic compounds in CRISTAL® processes
Carlos Campos, Benito J. Mariñas, Vernon L. Snoeyink, Isabelle Baudin, Jean Michel Laîné

273 Removal of humic substances with vibratory shear enhanced processing membrane filtration
Kazutaka Takata, Kazuyoshi Yamamoto, Rulin Bian and Yoshimasa Watanabe

283 Perspectives of the electrodialysis intensification
N.A. Mishchuk

297 The early history of reverse osmosis membrane development
Julius Glater

311 The Hollow Fibre Cartridge™ - operational experience with an improved reverse osmosis device/technology
Gerhardt Reibersdorfer, C. Peter Shields and J.W. Strantz

323 Effective new pretreatment for seawater reverse osmosis systems
Mark Wilf and Kenneth Klinko

63 Innovative system designs to optimize performance of ultra-low pressure reverse osmosis membranes
Julia E. Nemeth

73 The use of Dean vortices in coiled hollow-fibre ultrafiltration membranes for water and wastewater treatment
C. Guigui, P. Manno, P. Moulin, M.J. Clifton, J.C. Rouch, P. Aptel and J.M. Laîné

81 Biofouling in membrane systems - a review
John S. Baker and Linda Y. Dudley

91 Pressure exchange systems for energy recovery in reverse osmosis plants
P. Geisler, F.U. Hahnenstein, W. Krumm and T. Peters

93 Membrane filtration for greenhouse horticulture. Largest ultrafiltration plant in The Netherlands
Rob Bos, Lutte Broens, Simon Dost, Stephan van Hoof, Peter van der Maas and Hieke Oosterom

101 Characterization of clean and natural organic matter (NOM) fouled NF and UF membranes, and foulants characterization
Jaeweon Cho, Gary Amy, John Pellegrino and Yeomin Yoon

109 Nanofiltration of natural organic matter: removal, fouling and the influence of multivalent ions
A. Schäfer, A.G. Fane and T.D. Waite

123 Nanofiltration as a means of achieving higher TBT of $\geq 120^\circ\text{C}$ in MSF
Mohammad A.K. Al-Sofi, A.M. Hassan, Ghulam M. Mustafa, Abdul Ghani I. Dalvi and Mohammed N.M. Kither

131 Monitoring particulate fouling in membrane systems
Siobhán F.E. Boerlage, Maria D. Kennedy, Meseret Petros Aniye, Elhadi M. Abogrean, Gilbert Galjaard and Jan C. Schippers

143 The effect of colloid stability on membrane fouling
S.G. Yianatos and A.J. Karabelas

153 Biocide-free antifouling strategy to protect RO membranes from biofouling
Thomas Griebe and Hans-Curt Flemming

157 Biofouling of membranes for drinking water production
Hans S. Vrouwenvelder, J.A.M. van Paassen, H.C. Folmer, J.A.M.H. Hofman, M.M. Nederlof and D. van der Kooij

167 Effect of humic substances and anionic surfactants on the surface charge and performance of reverse osmosis membranes
Amy E. Childress and Shivaji S. Deshmukh

175 Intermittent crossflushing of hollow fiber ultrafiltration systems
Maria D. Kennedy, Soo-Myung Kim, Issac Mutenyo, Lutte Broens and Jan Schippers

Volume 118 (1998)**Proceedings No. 39: (see p. 287)**

1 Desalting of seawater using UF and RO – Results of a pilot study
John Murrer and Rick Rosberg

5 Design features of 20 migd SWRO desalination plant, Al Jubail, Saudi Arabia
Mohammed Badrulla Baig and Abdul Aziz Al-Kutbi

13 Standardisation of RO membrane performance
M. Safar, M. Jafar, M. Abdel-Jawad and S. Bou-Hamad

23 Performance characteristics of a cyclically operated seawater desalination plant in Tajoura, Libya
R.M. Jaluta, W.M. Elkhatib and A.A. Abufayed

25 Development of boron reduction system for sea water desalination
Yasumoto Magara, Akihisa Tabata, Minoru Kohki, Mutsuo Kawasaki and Masahiko Hirose

35 A new approach to membrane and thermal seawater desalination processes using nanofiltration membranes (Part 1)
A.M. Hassan, M.A.K. Al-Sofi, A.S. Al-Amoudi, A.T.M. Jamaluddin, A.M. Farooque, A. Rowaili, A.G.I. Dalvi, N.M. Kither, G.M. Mustafa and I.A.R. Al-Tisan

53 The largest seawater RO plant in the Great Britain
N. Marsh, J. Howard, S. Rybar, F. Finlayson and A. Linstrum

189 Fouling control by air sparging inside hollow fibre membranes – effects on energy consumption
S. Laborie, C. Cabassud, L. Durand-Bourlier and J.M. Laîné

197 Effects of backwash conditions on out-to-in membrane microfiltration
P. Hillis, M.B. Padley, N.I. Powell and P.M. Gallagher

205 Assessment of filtration mode for the ultrafiltration membrane process
K. Glucina, J.M. Laîné and L. Durand-Bourlier

213 Modelling of ultrafiltration fouling by neural network
N. Delgrange, C. Cabassud, M. Cabassud, L. Durand-Bourlier and J.M. Laîné

229 Evaluation of conventional and membrane processes for softening a North Carolina groundwater
Mark A. Thompson and Badi (Steve) Azar

239 Integrated multi-objective systems for surface water treatment: pre-treatment of nanofiltration, by riverbank filtration and conventional ground water treatment
Jacques A.M. van Paassen, Joop C. Kruithof, Simon M. Bakker and Frank Schoonenberg Kegel

249 Dead-end ultrafiltration of pretreated and untreated WWTP effluent for re-use in process water applications
Stephan C.J.M. van Hoof, C.P.T.M. Duyvesteijn and P.P.R. Vaal

255 Large-scale application of UF and RO in the production of demineralized water
Thomas Manth, J. Frenzel and A. van Vlerken

263 Production of boiler feed water out of wastewater with microfiltration and reverse osmosis: the new age challenge within reach
W.F.J.M. Nooijen, P.A. de Boks, P.R. Vaal and W.B. Suratt

267 Anglian Water membrane hybrid system for the soft drinks industry
Philip Holden

273 Characterization and removal of humic substances in ultra- and nanofiltration
Kati Ruohomäki, Pasi Väisänen, Sari Metsämuuronen, Maaret Kulovaara and Marianne Nyström

285 Suppression of CaCO₃ scale deposition by anti-scalants
David Hasson, Raphael Semiat, Dan Bramson, Markus Busch and Bracha Limoni-Relis

297 Treatment of canal water with ultrafiltration to produce industrial and household water
Ger Vos, Yvette Brekvoort, Hieke A. Oosterom and Maarten M. Nederlof

305 Low-polarisation electrodialysis membranes
Ora Kedem, L. Schechtman, Y. Mirsky, G. Saveliev and N. Daltrophe

315 Microfiltration of activated sludge using submerged membrane with air bubbling (application to wastewater treatment)
El Hani Bouhabila, Roger Ben Aïm and H. Buisson

323 Coupling flocculation with micro-ultrafiltration for waste water treatment and reuse
D. Abdessemed, A. Adin and Roger Ben Aïm

Volume 119 (1998)**Proceedings No. 39: (see p. 287)**

1 Membrane filtration of textile dyehouse wastewater for technological water reuse
Jadwiga Sójka-Ledakowicz, Tomasz Koprowski, Waldemar Machnowski and Hans Henrik Knudsen

11 Tailoring an economical membrane process for internal purification in the paper industry
Jutta Nuortila-Jokinen, Anne Kuparinen and Marianne Nyström

21 Purification of alkaline cleaning solutions from the dairy industry using membrane separation technology
Gun Trägårdh and Dan Johansson

31 Application of a membrane process to close the water circuit within a Vulcan-fibre factory
Helmut Müller, Götz Baumgartner, André Wortel and Uwe Offermann

33 Advanced concept of large seawater desalination systems for Israel
Pinhas Glueckstern and M. Priel

47 New membrane developments expanding the horizon for the application of reverse osmosis technology
Robert Gerard, H. Hachisuka and M. Hirose

57 Only two membrane modules per pressure vessel? Hydraulic optimization of spiral-wound membrane filtration plants
Walter G.J. van der Meer, M. Riemersma and J.C. van Dijk

65 Monitoring the integrity of capillary membranes by particle counters
Stefan Panglisch, Ulrike Deinert, Walter Dautzenberg, Olaf Kiepke and Rolf Gimbel

73 Acoustic sensor: a novel technique for low pressure membrane integrity monitoring
Jean Michel Laîné, K. Glucina, M. Chamant and P. Simonie

79 A comparison of ultrafiltration on various river waters
Judith Herschell Green and Michael Tylla

85 Removal of particles, bacteria and parasites with ultrafiltration for drinking water treatment
Klaus Hagen

93 Pilot scale microfiltration at Manitowoc
Nilaksh Kothari and J.S. Taylor

103 A low pressure ultrafiltration membrane system for potable water supply to developing communities in South Africa
M.J. Pryor, E.P. Jacobs, J.P. Botes and V.L. Pillay

113 Enhanced surface water treatment by ultrafiltration
J.A.M.H. Hofman, M.M. Beumer, E.T. Baars, J.P. van der Hoek and H.M.M. Koppers

127 Application of membrane technology for drinking water
Wentie Ma, Zhicai Sun, Zhongxiang Wang, Yu Bi Feng, Tong Chun Wang, U.S. Chan, Chan Hong Miu and Shucai Zhu

133 Integration of ultrafiltration to conventional drinking water treatment for a better particle removal - efficiency and costs?
P. Lipp, G. Baldauf, R. Schick, K. Elsenhans and H.-H. Stabel

143 Monitoring the integrity of reverse osmosis membranes
Samer Adham, Paul Gagliardo, Daniel Smith, David Ross, Karl Gramith and Rhodes Trussell

151 Development of a tank-submerged type membrane filtration system
Koji Suda, S. Shibuya, Y. Itoh and T. Kohno

159 Modelling concentration polarisation phenomena for membrane channel with cylindrical geometry in an ultrafiltration process
Sergei P. Agashichev

169 Application of nanofiltration for recycling of paper regeneration wastewater and characterization of filtration resistance
Kyu-Hong Ahn, Ho-Young Cha, Ick-Tae Yeom and Kyung-Guen Song

177 Treatment of whey effluents from dairy industries by nanofiltration membranes
H.S. Alkhatim, M.I. Alcaina, E. Soriano, M.I. Iborra, J. Lora and J. Arnal

185 Concentration of radioactive waste solutions of iodine (I^{125}) from radio immune analysis (RIA) using membrane techniques
Jose M. Arnal, Esteban Campayo, J. Lora Garcia, I. Iborro Clar, M. Alcaina Miranda and M. Sancho Fernandez

187 Water saving in a two stage diafiltration for the production of whey protein concentrates
D. Barba, F. Beolchini and F. Veglio

189 Reducing fouling of RO membranes by redox-initiated graft polymerization
Sofia Belfer, Y. Purinson and Ora Kedem

191 Comparison of ceramic and capillary membranes in the treatment of natural water by means of ultrafiltration and microfiltration
Michał Bodzek and Krystyna Konieczny

199 Increasing conversion in membrane filtration systems using a desupersaturation unit to prevent scaling
Ingrida Bremere, Maria D. Kennedy, Amayo Johnson, Rani van Emmerik, Geert-Jan Witkamp and Jan C. Schippers

205 RO treatment of waste waters from dairy industry
Giovanni Del Re, G. Di Giacomo, L. Aloisio and M. Terreri

207 Performance assessment of seawater reserve osmosis membranes
Sadeq Ebrahim, M. Abdel-Jawad, A. Al-Saffar and M. Al-Tabatabaei

209 An example of water conservation and wastewater minimization by membrane filtration
J. Faber, P.P.J.M. van Oort and A. Reigersman

213 Membrane processes for water reuse in the food industry
A. Fähnrich, Valko Mavrov and H. Chmiel

217 System design for large-scale ultrafiltration applications
Harry Futselaar and Dick C. Weijenberg

225 Analysis and behaviour of chloride solutions in flat reverse osmosis membranes
A. Gómez Gotor, S. Bachir and C. Argudo

229 Evidence for membrane fouling by specific TOC constituents
Stefan A. Huber

235 Removal of natural radionuclides from drinking water by point of entry reverse osmosis
Pia Huikuri, Laina Salonen and Oliver Raff

241 Possibilities for the rational use of energy from thermal waters
Zoran Jankovic

243 Operational experience with a new fouling resistant reverse osmosis membrane
Mike Jenkins and Matthew B. Tanner

251 Disinfection of surface and ground waters with polymeric ultrafiltration membranes
Krystyna Konieczny

259 Silt density index (SDI), percent plugging factor (%PF): their relation to actual foulant deposition
Seymour S. Kremen and Matt Tanner

263 Integrated multi-objective membrane system applications of reverse osmosis at the Amsterdam Water Supply
Maarten M. Nederlof, Joop C. Kruithof, Jan A.M.H. Hofman, Martin de Koning, Jan-Peter van der Hoek and Paul A.C. Bonné

275 Feasibility of micro- and ultrafiltration for the direct treatment of surface water: results of various pilot studies
H. Oosterom, G. Galjaard, M.M. Nederlof and J.C. Schippers

277 Ultra- and microfiltration pilot plant investigations to treat reservoir water
Stefan Panglisch, Walter Dautzenberg, Olaf Kiepke, Rolf Gimbel, Jürgen Gebel, Anette Kirsch and Martin Exner

289 Purification of landfill leachate with reverse osmosis and nanofiltration
Thomas A. Peters

295 Removal of hardness from groundwater by nanofiltration
Johan Schaeep, Bart van der Bruggen, Steven Uytterhoeven, Raf Croux, Carlo Vandecasteele, Dirk Wilms, Emmanuel Van Houtte and Frans Vanlerberghe

303 Characterisation of surface properties of ceramic ultrafiltration membranes by studying diffusion-driven transport and streaming potential
A. Szymczyk, P. Fievet, J.C. Reggiani and J. Pagetti

309 Study of electrokinetic properties of plate ceramic membranes by electroosmosis and streaming potential
A. Szymczyk, P. Fievet, M. Mullet, J.C. Reggiani and J. Pagetti

315 Ultrafiltration as an advanced tertiary treatment process for municipal wastewater
George Tchobanoglous, Jeannie Darby, Keith Bourgeois, John McArdle, Paul Genest and Michael Tylla

323 Membrane filtration and pre-treatment by GAC
Wataru Tsujimoto, Haruo Kimura, Tomohiro Izu and Takashi Irie

327 Design of a stand alone PV-desalination system for rural areas
E. Tzen, K. Perrakis and P. Baltas

335 Ultrafiltration of surface water with @MOLPURE FW50 hollow fiber module
Patrick Weber and Rüdiger Knauf

341 Innovative design of nano- and ultrafiltration plants
L.P. Wessels, W.G.J. Van der Meer, W.C. Van Paassen and G. Vos

347 Treatment of a hard borehole water containing low levels of pesticide by nanofiltration
E. Wittmann, P. Côté, C. Medici, J. Leech and A.G. Turner

353 Development of portable pure water station
H. Wang and G. Zhang

355 Production of ultrapure water STN-LCD process line
Guoping Zhang and J. Shong

357 Water re-use in an oil refinery
C.P.T.M. Duyvesteijn

359 Modification of tefzel film by graft copolymerization of methacrylonitrile for use as membrane
Inderjeet Kaur, G.S. Chauhan and B.N. Misra

361 Purification of waste water from heavy metals by using ceramic membranes and natural polyelectrolytes
V.N. Mynin and G.V. Terpugov

363 A membrane apparatus design for cellulose-paper manufacture drains purification
V.N. Mynin and G.V. Terpugov

Volume 120 (1998)

175 Electroextraction of Pb²⁺ ions from diluted solutions by a process combining ion exchange textiles and membranes
K. Basta, A. Aliane, A. Lounis, R. Sandeaux, J. Sandeaux and C. Gavach

185 Reclamation of wastewater effluent from a chemical fiber plant
S.H. Lin and C.S. Lin

197 Optimization of number of effects for higher yield from an inverted absorber solar still using the Runge-Kutta method
Sangeeta Suneja and G.N. Tiwari

211 Nanofiltration of combined salt and sugar solutions: coupling between retentions
Eert Vellenga and Gun Trägårdh

221 Membrane filtration characteristics in membrane-coupled activated sludge system – the effect of physiological states of activated sludge on membrane fouling
In-Soung Chang and Chung-Hak Lee

235 Electromembrane processes for waste stream treatment electrodialysis applied to the demineralization of phenylalanine solutions
Steve Resbeut, Gérald Pourcelly, Roger Sandeaux and Claude Gavach

247 Energy production at the Dead Sea by pressure-retarded osmosis: challenge or chimera?
Sidney Loeb

263 Optimization of fluoride removal from brackish water by electrodialysis
Zakia Amor, Saud Malki, Mohamed Taky, Bernard Bariou, Nabil Mameri and Azzeddine Elmidaoui

273 Solar desalination with a humidification-dehumidification cycle: performance of the unit
Said Al-Hallaj, Mohammed Medhi Farid and Abdul Rahman Tamimi

281 Desalination in Israel - present and future
Anat Shauly

Volume 120 (1998)**Proceedings No. 40: (see p. 287)**

1 Preface
Waleed K. Al-Zubari

3 Towards the establishment of a total water cycle management and re-use program in the GCC countries
Waleed K. Al-Zubari

15 UNESCO's international hydrological programme and sustainable water resources management in the Arab region
Abdin M.A. Salih and Nagwa Ibrahim

23 Roof structural damage of Sitra Power and Water Station phase I multi-stage flash units
Moh'd A. Redha Ghulam Hussain and A. Hussain Yousif Al-Jaziri

33 A kinetic model for scale formation in MSF desalination plants. Effect of antiscalants
A. Mubarak

41 Kinetics of hydrolysis of chloroform and bromoform in aqueous solutions
A.M. Shams El-Din, Rasheed A. Arain and A.A. Hammoud

53 The desalination plants of Oman: past, present and future
Taher bin Mohammed Ali Al-Sajwani

61 Rehabilitation of long tube parallel flow evaporator. Al-Ghubrah power plant and desalination
A.R. Abu Dayyeh, Ribhi Hamdan, P.K. Mukerjee and P.A. Vijay Kumar

73 Performance of high chromium stainless and titanium alloys in Arabian Gulf seawater
Ali Al-Odwni, Mohammed Al-Tabtabaei and Ahmed Abdel-Nabi

83 Use of GRP material in power and desalination plants
N.J. Paul, Hasan Ibrahim Al-Hosani and A. El-Masri

89 Feed salinity and cost-effectiveness of energy recovery in reverse osmosis desalination
M.A. Mandil, H.A. Farag, M.M. Naim and M.K. Attia

95 Comparative performance analysis of two seawater reverse osmosis plants: twin hollow fine fiber and spiral wound membranes
Sameer Bou-Hamad, Mahmoud Abdel-Jawad, Mohammad Al-Tabtabaei and Saud Al-Shammari

107 A case study of RO plant failure due to membrane fouling, analysis and diagnosis
M. Gamal Khedr

115 Performance evaluation of ten years operation experience of brackish water RO desalination in Manfouha plants, Riyadh
Raed I.S. Al-Mudaiheem, Sami O.A. Al-Yousef, Tamer Sharif and A.K.M. Amirul Islam

121 Pilot study of MSF-RO hybrid systems
Essam El-Sayed, Sadeq Ebrahim, Ahmad Al-Saffar and Mahmoud Abdel-Jawad

129 Specific privatization issues applicable to water and electricity utilities in the Gulf Cooperation Council states
Jamil S.K. Al-Alawi

137 Practical solutions to problems experienced in open seawater RO plants operating on the Arabian Gulf
Mohammed Obaid and Ali Ben-Hamida

143 The Addur SWRO Desalination Plant – towards a full plant production
Ali Redha Hussain and Ahmed Hashim Ahmed

153 Prediction of performance of RO desalination plants
Ibrahim S. Al-Mutaz and Bander A. Al-Sultan

161 Problems of operation and maintenance of aged deep wells
Ibrahim M. Abo'abat, Hasan Thabit Mohamed and Sulaiman Mubarak Abu Alaiwi

163 Trace metals in groundwater treatment plant's product water of the central region of Saudi Arabia
Abdulrahman Alabdula'aly

Volume 121 (1999)

1 Economic analysis and design of crossflow microfiltration for water treatment systems
H.B. Dharmappa and P. Hagare

13 Loss of permeability of anion exchange membranes in contact with zinc chloride complexes
Fatiha Aouad, Arlette Lindheimer, M. Chaouki and Claude Gavach

23 The application of membrane distillation for the concentration oil-water emulsions
M. Gryta and K. Karakulski

31 Effect of propionic acid in the casting solution on the characteristics of phase inversion polysulfone membranes
Myeong-Jin Han

41 A simple and accurate determination of the point of zero charge of ceramic membranes
M. Mullet, P. Fievet, A. Szymczyk, A. Foissy, J.C. Reggiani and J. Pagetti

49 Contribution of power/desalination plants to the levels of halogenated volatile liquid hydrocarbons in the coastal areas of Kuwait
Talat Saeed, Hosny Khordagui and Huda Al-Hashash

65 Model reduction and robust control of multi-stage flash (MSF) desalination plants
Emad Ali, Khalid Alhumaizi and Abdelhamid Ajbar

87 Optimization of design parameters for multi-effect active distillation system by using the Runge-Kutta method
Sanjeev Kumar and G.N. Tiwari

103 Exergo-environmental analysis of processing condensed water from atmospheric air
C. Gómez Camacho

117 Application of hybrid complexion-ultrafiltration process for removal of metal ions from galvanic wastewater
Michał Bodzek, Irena Korus and Krzysztof Loska

123 The use of electro-electrodialysis for the removal of sulphuric acid from decontamination effluents
S. Cattoir, D. Smets and A. Rahier

131 Calculation of osmotic pressure difference across membranes in hyperfiltration
Ai-Hu Zhong, Hong-Ying Wu and Jin-Zhang Gao

139 The application of reverse osmosis and nanofiltration to the removal of nitrates from ground water
Jolanta Bohdziewicz, Michał Bodzek and Ewa Wasik

149 Ultra-low pressure water softening: A new approach to membrane construction
Alicja M. Mika, Ronald F. Childs and James M. Dickson

159 Market potential of renewable energy powered desalination systems in Greece
D. Voivontas, K. Yannopoulos, K. Rados, A. Zervos and D. Assimacopoulos

173 Inhibitors for chemical cleaning of iron with tannic acid
A.M. Al-Mayouf

183 Sodium chloride stimulus-response experiments in spiral wound reverse osmosis membranes: a new method to detect fouling
E. Roth, M. Kessler, B. Fabre and A. Accary

